ABSTRACT

From March 7, 1977 to June 14, 1977 a study was conducted at Cape St. Elias (59°47'48"N, 144°36"18") to determine the population dynamics and the composition of the Steller Sea Lion (*Eumetopias jubatus*) hauling ground/rookery located at the Cape. Daily movements of individually recognizable animals were recorded. Results indicate that although the population remains within consistent bounds during this spring period there was an almost complete turnover of the population. Observations and records were made on aborting females. Blood and tissue samples were collected from two females for normal pathological analysis and for attempting to locate the San Miguel sea lion virus (SMSV). To date no results are available on these samples. A sea watch was kept for the spring migration of the grey whale (*Eschrichtius robustus*). Results show consistent small numbers going north with a distinct peak movement between April 16 to April 29.

I. Introduction

Objectives of this study were severalfold but in general they were feasible because of the visibility of the sea lion pups that had been branded by Alaska Department of Fish and Game in June of 1975 and 1976. The objectives were:

A. To watch for and record all branded animal activity.

B. To compile a catalog of individually recognizable animals.

C. To record population numbers, sex and age composition and specific locations occupied in the rookery/hauling ground.

D. To watch for and record the shift from the Pinnacle hauling area to the Peninsula rookery.

E. To record any abortive reproduction activity.
   1. To collect tissue and blood samples from aborted fetuses.
   2. To collect tissue and blood samples from females post abortion.

F. Record first copulation and subsequent mating behavior and activity.

G. To watch for and note any tagged animals from a Canadian tagging project.

II. Field Activities

A. Study Area

Kayak Island, in the Gulf of Alaska, is terminated on its southwest offshore end by a 750 foot pyramid of rock referred to, on nautical charts, as the "Pinnacle." On the west and southwest side of the Pinnacle the sea is tight to the base and huge boulders of rock, that have historically apparently fallen from the sides of the Pinnacle, form a hauling area of stable rocks for the sea lions. To the south of the Pinnacle for approximately 1/4 mile, extends a peninsula of rock and/or reef that is awash during storms and monthly high tides. See Appendix 2.

B. Methods

Observations were begun on March 9, 1977 and continued through June 14. Exceptions were made for good and adverse weather but a general observation pattern soon developed. From one to three hours were spent in the early morning in making general distribution counts, observing activity away from the hauling area, and making other marine counts. By mid-morning we'd be on the Pinnacle in one of three observation posts. These posts were approximately 65 feet above sea level and among the rocks that lower near the sea, formed the hauling rocks of the main Pinnacle hauling area. See map Appendix 2. If no collecting opportunities were apparent between 6 to 10 hours were then spent observing the lions. Returning

to the Cape in the evening we usually spent from one to three hours writing notes and making further general observations.

All field observations were recorded in the field on either or both a tape recorder and a waterproof book and transcribed each night. Observations were made with the unaided eye, with 7X26 binoculars, and with a 80X/130X Questar telescope. Photos were taken on a 35mm SLR Petri with a 55mm and a 200mm lens, and through the Questar with a 35mm SLR Minolta.

All census work totals were estimates. Census work was done on the Pinnacle hauling area with the unaided eye and recorded on the tape; for the rookery on the Peninsula the Questar was used. Counting was done by units of 10 to 50. No correction was added for hidden or buried animals. Several sets of census photos were taken throughout the study period to get a relative correction on estimates.

Collecting was done with a .30-.30. All animals were shot through the upper neck. Two adults, one 1976 pup and one 1975 pup were taken. Blood was collected in vacu-tainers and allowed to settle for 36 hours. The serum was poured off and frozen. Tissue samples were put into clean plastic bags in the field and later wrapped in aluminum foil and frozen or preserved in 10 to 1 formalin solution. The stomach contents from three animals were taken and sorted through a set of double screens, $2.0mm^2$ and $0.084mm^2$.

C. Data Collected

1. Table 1 indicates the dates and numbers of recognized branded animals. It also shows the percent this number represents of the total branded animals seen.

2. Table 2 shows branding scheme for each rookery. It also gives the total number of pups branded per rookery and the percent that rookery represents of the total branded in that year.

3. Table 3 shows animal numbers on the Pinnacle relative to the Peninsula.

4. Table 4 indicates when individually recognizable animals were observed.

5. Table 5, collection data on sea lions.

6. Table 6, noted abortive reproductive activity.

7. Table 7, collection data and field notes on aborted fetuses.

8. Table 8, sex and age composition data.

9. Table 9, observed Canadian tagged sea lions.

III. Results

Initially it seemed that there was a very low percentage of branded animals among the sea lions on the hauling area under the Pinnacle. With time though it was evident that the branded animals were there, but that their visibility was generally low.

One hundred twenty-two animals[1] that had either distinctive brands or other wounds that enabled positive identification were sketched[2] and daily records of observation noted. See Table 4.

On 16 days between March 9, 1977 and April 15, 1977 brand counts were made on the Pinnacle. 1976 Sugarloaf pups represented 42 percent of the observed brands. In 1976, Sugarloaf provided only 25 percent of the total pups branded. Seal Rock rookery represented 17 percent of observed brands. The 316 branded at Seal Rocks represent 6 percent of the total 1976 brand. See Table 1 and Table 2.

The average percent of branded animals relative to total animals on the Pinnacle was 10 percent. On April 10, 1977 it was unusually high at 28 percent. This was one of the first days that large numbers of animals had hauled and remained on the Peninsula. See Table 3. Of the 181 animals on the Pinnacle on April 10, 1977, 122 (67%) were in the 1976 pup/yearling class; of these 122, 50 (41%) were branded.

As the animals at the Cape hauled on the Peninsula, rather than the Pinnacle, we stopped attempting to get brand totals. The visual distance

to the Peninsula was too great and the visual view angle was so low that my totals would not have been comparable day by day nor comparable to counts on the Pinnacle.

During the first two weeks of April the animals began consistently hauling out in large numbers on the Peninsula. Concurrent with this new pattern was the decrease of familiar distinctive brands from the Pinnacle hauling area. By April 15, 1977, with a couple of exceptions, all early catalogued animals were gone from the Cape area. See Tables 3 and 4. A high frequency of young animals seen offshore west of the Cape were the only observations made on movements, not related to the immediate Cape activity. Generally these offshore animals would ultimately haul on the Cape[3].

The first indication of aborted reproductive activity was a fetus on March 16, 1977. Between that date and May 7, 1977 indication of 20 were noted. See Table 6. All attempts to collect aborted fetus blood were unsuccessful but measurements of six, of the twenty observed, were taken. A very nominal amount of the laboratory analysis has been completed on both the aborted fetus tissue samples (see Tables 6 and 7) and the collected sea lion tissue (see Table 5). In addition no analysis has been completed relative to the possibility of Leptospira-induced abortions.

The first surviving pup was born May 29, 1977 and first observed copulation was on June 2, 1977.

Two young sea lion with blue ear tags and two with yellow ear tags were seen between May 12, 1977 and June 5, 1977. See Table 9.

A summary of the sea watch for grey whales is attached as Appendix 3.

IV. Interpretation

Brand visibility was dependent upon several factors; the most important was the general level of activity of the hauling area or rookery. Frequently an animal that we would have thoroughly looked over would turn or roll just a small amount and it's brand would become visible. A very low angle of light or deep shadows would make brands very difficult to read. Also when a dry animal got splashed on the branded shoulder with water the pattern was often lost to identification.

Among the observed branded animals the low percentage of the largest group of 1976 branded animals (Marmot Island) and the high percentage of the much smaller group of Sugarloaf animals seems to indicate that the area between these two major rookeries may be, to some degree, a range distribution boundary. This is further supported by the very low percentage of 1975 Marmot Island animals seen on the Cape. The high percentage of Seal Rocks brands, relative to the low number branded, would also indicate a close association between Seal Rocks and Cape St. Elias.

Late in April I began to think we were seeing a new group of animals rather than a population shift from the Pinnacle hauling area to the Peninsula rookery. Comparing Table 3, where it is apparent that even earlier in April the animals were hauling on the Peninsula rookery, to

Table 4 of resighted individually recognized animals, shows that many of the animals that hauled out on the Peninsula rookery were new animals to the Cape area. This I believe indicates that the winter population of the Cape are Pinnacle hauling area oriented and that summer residents are Peninsula area oriented. Hence the apparent shift from the Pinnacle to the Peninsula represents a movement of winter animals away from the Cape area, with replacement on the Peninsula rookery by different animals.

No indication of any migration direction can be noted as all sea lion movements, away from the immediate Cape vicinity, were random and biased by the observers position.

The sea lion use of Cape St. Elias as a rookery is very nominal. As of June 14, 1977 there were 9 or 10 live pups out of 15 or 16 known live births. Mortality by the sea is high, both directly through drowning and indirectly by trampling, as the tides displace adults.

Personal communication with Professor Fisher of the University of British Columbia indicates that the male sea lions were tagged in the right ear, females the left ear. The May 12 animal (see Table 9) was a slender, small female form with no scars. Where the June 5 animal was heavy shouldered, extensively scarred and sparring for an extended period with other male lions. No indication of a number was discernable on either blue tag. Therefore, I believe that there may have been a sex identification mistake made when tagged and that the May 12, 1977 animal and the June 5, 1977 animal are different animals.

On May 28, 1977 a yellow tag #525 was estimated a female; 12 days later the same animal (#525) was observed with its sex in doubt but thought a female. Per correspondence it was a male.

Therefore, two and possibly three young sea lions tagged in Canada were identified at Cape St. Elias.

V. Problems

No problems of any significance were encountered.

VI. Preliminary Objectives for Spring 1978

A. To note specific daily location of cataloged animals.

B. To compare cataloged animals position and dates on the Cape with 1977 data.

C. To closely note dates and position of the arrival of new animals on the Peninsula.

D. To attempt to determine the incidence of return to the Pinnacle once the animal begins to haul on the Peninsula.

E. To watch for activity that might indicate direction of departure of winter animals and/or arrival of summer animals.

F. Dependent upon final analysis of tissue and blood samples:

1. Collection of aborted females.

2. Collection of known age animals.

G. Sea watch for whale migration and activity.

Table 1. Recognized Brands

Date	X left shoulder	O left shoulder	X right shoulder	T right shoulder	J right shoulder	V right shoulder	E right shoulder	L right shoulder	Total per day
March 9			5	3	2				10
March 13			4	3					7
March 14	1		17	10	8				36
March 17		1	12	5	7	2		1	28
March 18	1	1	15	6	7	1		1	32
March 19	4		24	11	9	1			49
March 20	1		17	15	4	2	1		40
March 21	5		24	13	4	2	1	1	50
March 22	2		16	9	9	3	1	2	42
March 23	2		17	11	5	5	2		42
March 27	3		11	14	9	3	1	4	45
March 28	3		12	9	8			1	33
April 5	2	1	18	10	7	1	1	3	43
April 10	4	1	19	14	9		1	2	50
April 14			14	9	3	1	2	1	30
April 15	1		10	10	6	1			28
Total	29	4	235	152	97	22	10	16	565
% each brand represents of total observed	5%	.007	42%	27%	17%	4%	2%	3%	

Table 2. Sea Lion Branding Data.

Year	Location	Brand symbol	Shoulder	# branded	% of total branded animals that year
1975	Sugarloaf, Barren Islands	X	Left	--	--
1975	Marmot Island, north of Kodiak	O	Left	--	--
1976	Sugarloaf, Barren Islands	X	Right	1,443	.25
1976	Marmot Island, north of Kodiak	T	Right	3,669	.64
1976	Outer Island, Kenai Peninsula	V	Right	249	.04
1976	Fish Island, Wooded Island Group P.W.S.	E	Right	29	.005
1976	Pinnacle, Cape St. Elias, Kayak Is.	L	Right	23	.004
1976	Seal Rock, Montague St., P.W.S.	J	Right	316	.06

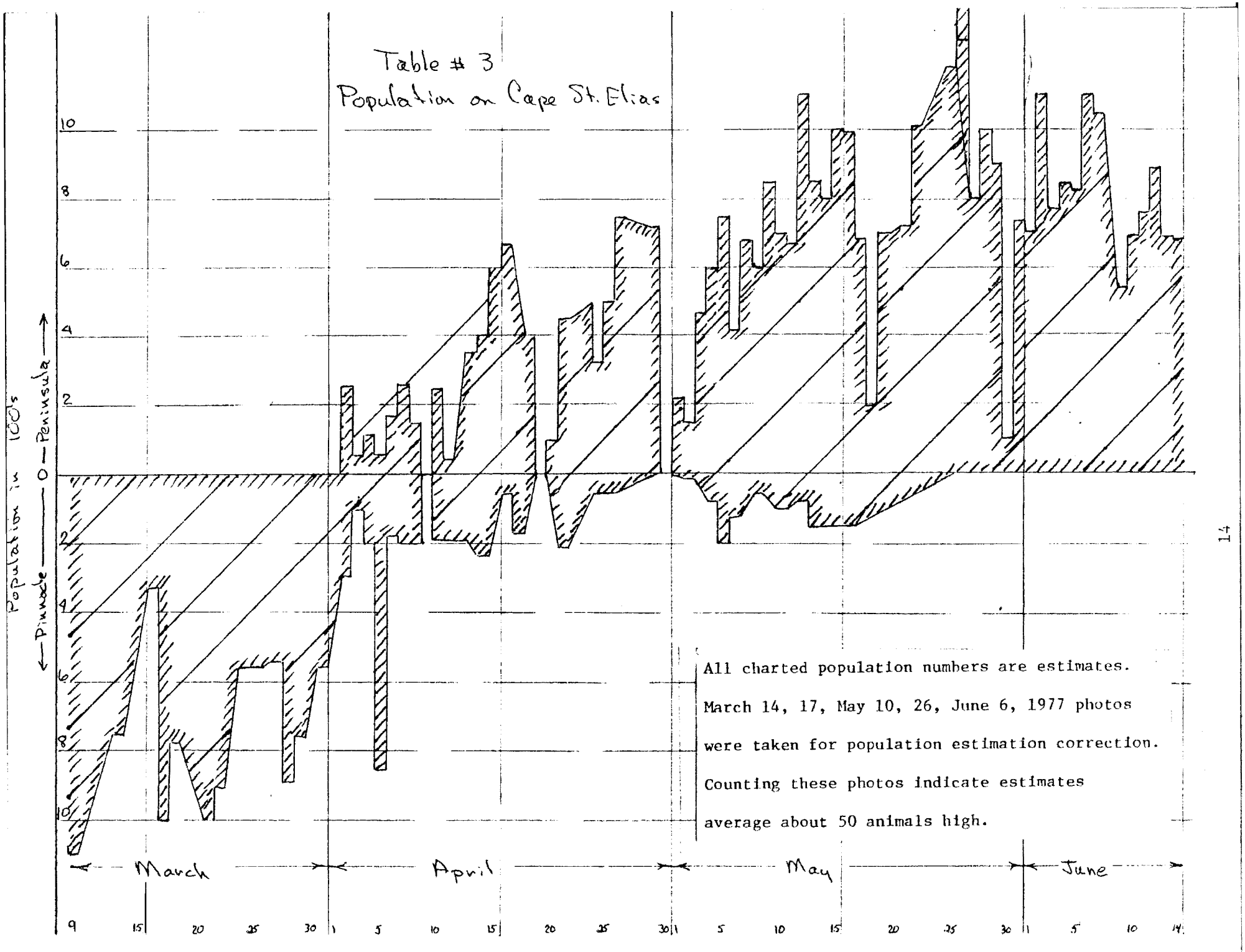
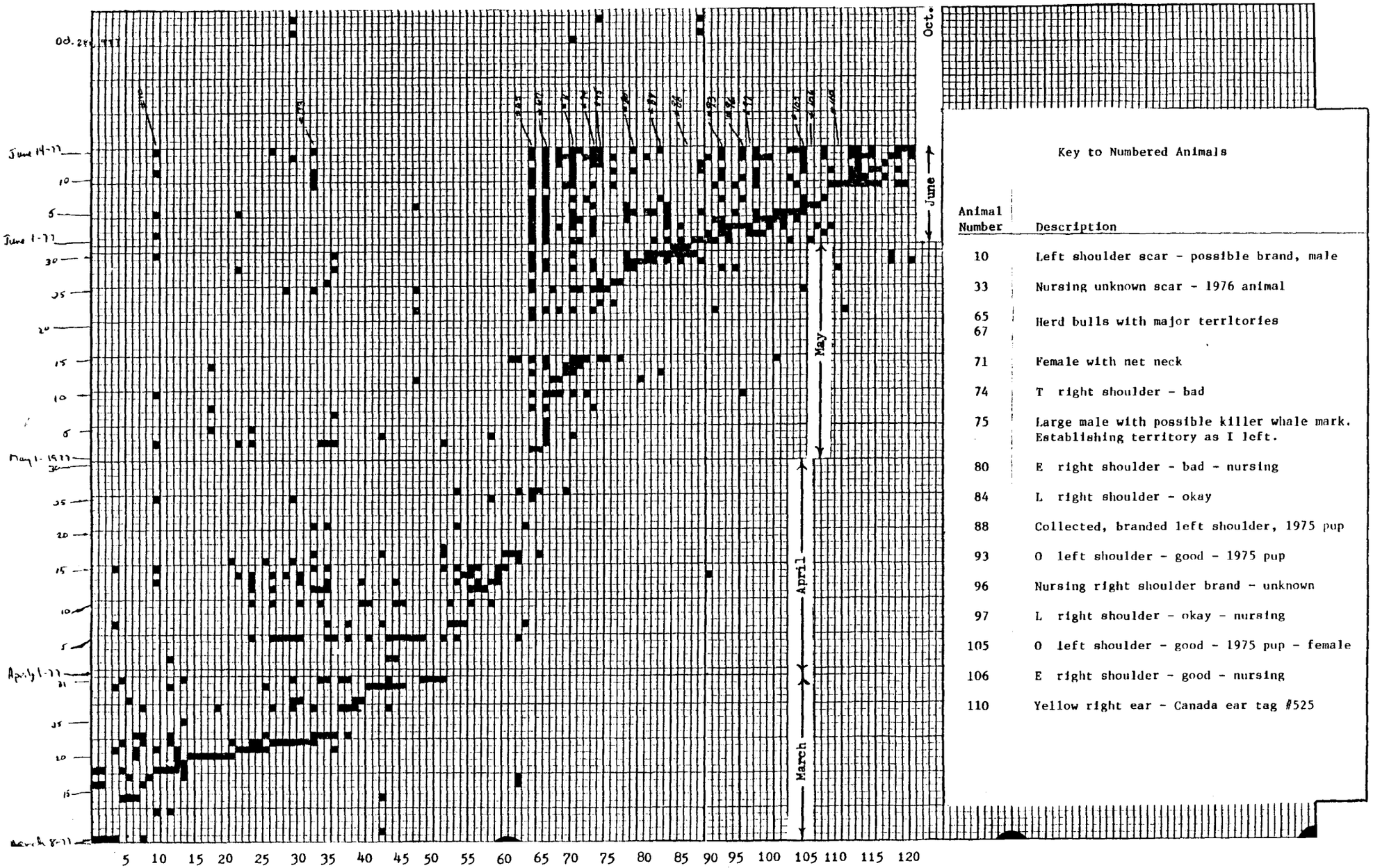


Table # 3
Population on Cape St. Elias
Population in 100's
← Pinnacle — 0 — Peninsula →
10
8
6
4
2
2
4
6
8
10
March
April
May
June
9
15
20
25
30
1
5
10
15
20
25
30
1
5
10
15
20
25
30
1
5
10
14
All charted population numbers are estimates.
March 14, 17, May 10, 26, June 6, 1977 photos
were taken for population estimation correction.
Counting these photos indicate estimates
average about 50 animals high.

Table 4. Individually Recognized Animals.



Key to Numbered Animals

Animal Number	Description
10	Left shoulder scar - possible brand, male
33	Nursing unknown scar - 1976 animal
65 67	Herd bulls with major territories
71	Female with net neck
74	T right shoulder - bad
75	Large male with possible killer whale mark. Establishing territory as I left.
80	E right shoulder - bad - nursing
84	L right shoulder - okay
88	Collected, branded left shoulder, 1975 pup
93	O left shoulder - good - 1975 pup
96	Nursing right shoulder brand - unknown
97	L right shoulder - okay - nursing
105	O left shoulder - good - 1975 pup - female
106	E right shoulder - good - nursing
110	Yellow right ear - Canada ear tag #525

Table 5. Collection Data on Sea Lions.

	C.S.E.#1	C.S.E.#2	C.S.E.#3	C.S.E.#4
Dat.	3/21/77	3/25/77	4/21/77	5/31/77
Sex	Female	Female	Male TRSG	Male left shoulder brand
Weight	450 lb.(est.)	--	170 lb.(est.)	250 lb.(est.)
Location	Pinnacle hauling area	Pinnacle hauling area	Pinnacle hauling area	Dragon Back Rock on Penin.
Curvilinear length	See note	291 cm	170.6 cm	202.6 cm
Standard length	See note	--	154 cm	189.5 cm
Blubber sternum	1.7 cm	2.3 cm	3.5 cm	3.9 cm
Blubber between front flipper	2.2 cm	2.1 cm	3.2 cm	3.6 cm
Neck girth	--	68.5 cm	--	65.2 cm
Body girth behind front flipper	--	150 cm	97.7 cm	122.5 cm
Re. lipper	--	51 cm	35.8 cm	46.5 cm
Vibrissae length	29.5 cm	19.5 cm	15.3 cm	16.8 cm
Blood	Yes/possible contamination	Yes/separated froze serum	Yes/separated froze serum	Yes/separated froze serum
Reproductive tract	--	No/see notes	--	baculum&testes
Large intestine	Yes/processed	Yes/processed	Yes/processed	Yes/processed
Stomach	Yes/processed	Yes/processed	Yes/processed	Yes/processed
Stones	None	None	None	None
Liver	Yes/frozen	Yes/frozen	Yes/frozen	Yes/frozen
Tongue	Yes/frozen	Yes/frozen	Yes/frozen	Yes/frozen
Heart	Yes/frozen	Yes/frozen	Yes/frozen	Yes/frozen
Flank	Yes/frozen	Yes/frozen	Yes/frozen	Yes/frozen
Blubber	--	Yes/frozen	Yes/frozen	Yes/frozen
Sk issue	--	Yes/frozen	No	Yes/frozen brand
Skull	Yes/frozen	Yes/frozen	Yes/frozen	Yes/frozen

Collection Notes on Sea Lions

C.S.E. #1 See Table 7 collection notes on Fetus #6. After observing this female for 30 minutes I shot her. She had crawled with the new pup back into a hole between three boulders and hence some of the data was impossible to obtain. We had remarked that she was wet but presumed it associated with the abortion until we processed her stomach. The intestine was completely empty and the stomach very full. The condition of the stomach contents indicated that she had very recently hauled from the sea. She also had a nursing unbranded animal with her that appeared a 1976 pup. Based on the 1976 pup's dry pelage it had not accompanied her in the sea.

C.S.E. #2 This female was observed for over a half hour in apparent labor--frequent body movement, stretching of limbs, upright on four flippers apparently straining. An 8 to 9 inch mass was visible that upon collection proved to be the inverted uterus. She was not carrying a fetus, there was no evidence of lactation nor any sign of recent birth in the reproductive organs. The uterus was dark black-red color and swollen. This swelling had blocked the pelvic passage and the bladder was 5 inches in diameter and over 10 inches long--very tight and distended.

C.S.E. #3 This was a right shoulder branded animal from Marmot Island.

C.S.E. #4 This was an apparent left shoulder branded animal. Unable to distinguish which rookery.

Table 6. Abortive Reproductive Activity.

Aborted fetus#	Date	History
# 1	3-16-77	Full data collected.
# 2	3-16-77	Full data collected.
# 3	3-16-77	Partially eaten when located.
# 4	3-18-77	Observed a bald eagle on entrails and blood on a rookery rock.
# 5	3-20-77	Found half eaten on rocks near water: no data.
# 6	3-21-77	Full data collected, temporarily alive-female became CSE#1.
# 7	3-21-77	Full data collected, watch female abandon it, never alive.
# 8	3-22-77	Observed blood on rookery rocks.
# 9	3-24-77	Bald eagles observed with skin east of Pinnacle.
# 10	3-28-77	Dead on a tidal rock in rookery. Tide removed.
# 11	3-28-77	Blood seen on rookery rock.
# 12	3-30-77	Female observed trailing blood and placental fluid.
# 13	4-2-77	Born on Lion Island. Alive approximately 1 1/2 hour.
# 14	4-8-77	Bald eagles seen with carcass of pup.
# 15	4-14-77	Observed female all afternoon with water bag. Collected full data following day.
# 16	4-21-77	Bald eagles on carcass under White Rocks in early morning.
# 17	4-21-77	One born west end of Lion Island, fell in sea.
# 18	5-3-77	Dead, abandoned on White Rocks, tide removed.
# 19	5-5-77	Dead on Lion Island, no blood-full data.
# 20	5-7-77	Bald eagles on carcass between Dragon Rocks and Cave.

Additional physical and situation circumstances are in field notes if needed.

Table 7. Collection Data on Aborted Fetuses.

	Fetus #1	Fetus #2	Fetus #6	Fetus #7	Fetus #15	Fetus #19
Date	3-16-77	3-16-77	3-21-77	3-21-77	4-14-77	5-5-77
Sex	Male	Male	Male	Female	See notes	Male
Weight	25.5 lb.	8 lb.	16 lb.	14 lb.	16-17.5 lb.	32 lb.
Location	Pinnacle	Pinnacle	Pinnacle	Pinnacle	Pinnacle	Peninsula
Curvilinear length	84 cm	60.5 cm	72.5 cm	74 cm	84.4 cm	97.2 cm
Standard length	76 cm	56 cm	63 cm	65 cm	76 cm	85.5 cm
Girth behind front flippers	47.5 cm	30 cm	43.5 cm	36 cm	41 cm	50.5 cm

Collection notes on aborted fetuses.

1. Hairless, toenails slipping when pulled, found on a rock out of tide water, intestines getting soupy. Suspect several days old.

2. Hairless, toenails slipping when pulled, found in a tide pool, suspect a day or two old.

6. Watched a female pull this fetus with her teeth. Collected the female which became C.S.E.#1. Female repeatedly picked up and dropped fetus on rocks. Fetus well developed, full pelage, eyes open and clear. Looked "good." Showed life signs for over 1/2 hour, breathing by gasps--head and flipper movement, no sounds though.

7. First saw this fetus as a female flipped it off a rock into a tide pool. It was hairless, pink, still in placenta with fluids, eyes closed, much less conformation and general firmness than #6. The female that was observed flipping fetus #7 into the tide pool was a large good-looking female in good condition. She was nursing what appeared to be a unbranded 1976 pup. After she disposed of the fetus she paid no further attention to it nor was any other unusual activity noted in her or her 1976 pup.

15. This fetus was found 4-15-77 but because of where it was located in the hauling area, position and condition of the fetus, I believe it belonged to a female that was in labor that we had watched for over five hours on 4-14-77. The eagles had gotten to it before we did

and removed the skin over the stomach from the anus to the sternum. Also missing were the intestines back of the diaphram, part of the pelvic bone, part of vertabral column and any indication of animal's sex. Therefore curvilinear and standard lengths, and weight are approximate. I believe lengths are close as dorsal skin, tail and legs were intact. There was a clear pink fluid in the lungs and chest cavity. My impression of the organs-normal, with exception of lungs being darker than usual. Darkness did not appear to be blood--I suspect that never breathing may explain color.

19. Located on Lion Island--good looking pup with surprising fat layer. Apparently the female had tried to revive him as puncture marks from her teeth were numerous over his body. There was a small amount of thin pink fluid in the intestinal cavity but, I think, not blood. Heart and lung blood not congealed so I collected some. The liver looked to have good color-smooth-firm-normal.

Table 8. Sex and Age Composition Data.

Date	Large Adult Male	Adult Male	Subadult Male	Female	1976 Pup	Unid.	Total	Notes
3-16-77		24			10		327	
3-22-77		22			est.400		800-900	This includes 2yr.old in the 400.
3-25-77		3		11	13	1	28	Early animals on Peninsula
4-4-77	3			4	4		12	Total on Pinnacle
4-7-77		2	6		34		128	Peninsula animals
4-16-77		4	11	15	-----5-----		51	Pinnacle animals
4-17-77	6	12	6	very few	77		164	Pinnacle animals
4-21-77		12		5	22		90	Pinnacle animals
4-21-77	25	5	6		49		121	Peninsula animals(PM)
4-21-77	40	32					205	Peninsula animals(AM)
4-24-77	12			5	4		52	Pinnacle animals
4-25-77	11	14		7	21		56	Pinnacle animals
5-4-77		45	7	6	5		70	Pinnacle animals
5-5-77	----87-----				16		191	Pinnacle animals
5-6-77	----57-----		12	3	1	-0-	73	Pinnacle animals
5-8-77	----45-----		13	-0-	1	-0-	59	Pinnacle animals
5-13-77	---114-----		6	15	11	2	148	Pinnacle animals

Table 9. Observed Tagged Canadian Sea Lions

May 12, 1977

Left ear, blue roto tag, number unknown, estimate 3-year-old female. Observed resting at 50 yards. The tag was firm in the ear showing no movement, relative to the animal. There was no apparent swelling or infection in the ear.

May 28, 1977

Right ear, yellow roto tag, number appeared to be #525, estimate 2 (possible 3) year-old female. Observed resting at 150 yards. Tag was very loose in the ear relative to the animal and the two halves were loose relative to each other. No indication of swelling or infection in the ear. Large virus/fungus spot on lower edge of the left jaw.

June 5, 1977

Left ear, blue roto tag, number unknown, estimate 2-3-year-old male. Observed for over an hour sparring with another male--in and out of tide pools. Observation distances varied from 70 to 150 yards.

June 9, 1977

Right ear, yellow roto tag, number #525, doubt as to sex but thought a female, tag characteristics similar to May 28, 1977. Large virus/fungus spot on lower left jaw.

Appendix I Footnotes

[1] On March 9, 1977 we observed a blurred left shoulder marked animal that could have been a 1975 pup by his size and conformation. A diagram of his brand was made at that time, though it was never observed again in the spring.

On October 29, 1977 I spent three days on the Cape and observed a left shoulder branded animal that was familar but not in the catalog of 122 known animals. Only on later comparison of my field sketches did I realize that these two sightings were likely the same animal.

[2] The readability of the 1975 brands was very poor relative to the 1976 animals. I believe several factors are involved:

1. Loss of skin tissue elasticity due to branding.

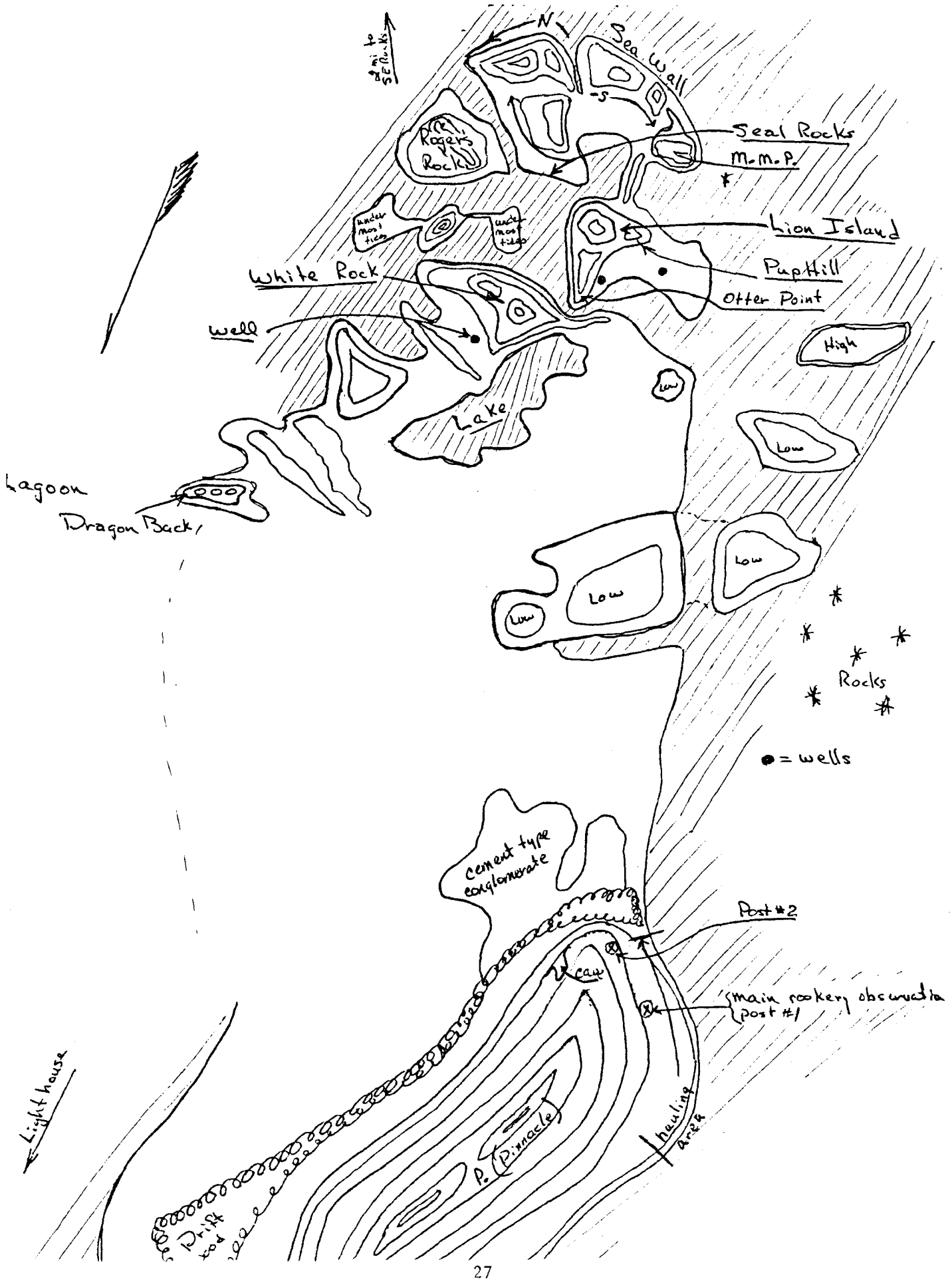
2. Loss of protective value of the hair.

3. Better branding equipment and techniques in 1976.

I believe that the skin surfaces around the branded area is more vulnerable to abrasion and/or wounds. Therefore, individual brands will not prove comparable year after year--rather new scar tissue is continually forming and brands are deteriorating.

[3] October 30, 1977. During the day three large male lions at different times were observed moving from inland dry positions to the sea. After 10-15 minutes of rolling and floating ventral side up near the hauling area they proceeded ESE past the Peninsula. They were last seen 1 1/2 miles offshore leaving the Cape area on a direct course.

Appendix 2. Topographical of Pinnacle & Peninsula



Appendix 3. Grey Whale Sighting Summary.

Date	Grey Whales	Unidentified Whales	Notes
Mar.8	2		
Mar.14		1-small blow seen	
Mar.15		1-small blow seen	
Mar.17		3-small blows seen once only	
Mar.18	4	1	
Mar.19		3-small blows seen	
Mar.20		4-small blows and one flipper (suspect grey)	
Mar.22			Whales were numerous all day. My notes read, "we were watching them before breakfast (6AM) and tonight with dark still seeing blows." Groups of 1,2 or 3 animals seemed to be the most prevalent. Some whales displayed a thrashing on the surface and one was observed coming vertically out of the water to a point past its flippers before falling back. We were busy with other work and hence an estimate of numbers difficult but again my notes say, "all day if one sat for five minutes he'd likely see a blow someplace on the horizon." [See 3-23-77]
Mar.23	24		This number, I feel sure, represents a part of total past Cape St. Elias today. My notes also indicate this 24 represents considerably fewer whales than 3-22-77.
Mar.24	1	1	
Mar.25	1	2 suspect grey whales by blows	
Mar.28	1	2 suspect grey whales by blows	
Mar.31	3	8 suspect grey whales by blows	
Apr.5		2 whales seen going south past Cape St. Elias. I feel they were sperms-large square head and had a substantial blow relative to greys	

Apr.8	4		
Apr.9	3		
Apr.14	2		
Apr.15	0[1/]		
Apr.16	61	25 all probably greys by blows, back silhouette, relative behavior and position in seas.	
Apr.17	106	28 see note 4-16-77	
Apr.18			No count made but impression was that they were as numerous as past two days. Notes read, "blows and fins seen from first light to last light." This was first day that the rolling activity was repeatedly seen[2/].
Apr.19 &20			Storm with gusts over 50 mph.
Apr.21	8[3/]	5	
Apr.22	18[4/]	1	[5/]
Apr.25	29		This again represents only a part of the whales that went past the Cape today. Numerous rolling-thrashing activity.
Apr.26	24	1	Numerous rolling activity all day.
Apr.27			Several groups of 1-3 greys seen in the lagoon just east of the Cape.
Apr.29	7		Seen between 7 a.m. and 9 a.m. The only period that I was able to make whale observations.
May 4	19		
May 6	1		
May 13		2	Dorsal silhouette seen once east of Cape, suspect greys. This was the last whale seen.
May 15			1 harbor porpoise going northwest.
			All sightings, unless otherwise stated, were seen going toward the right past the Cape. Generally they appeared to round the Cape from the east and proceed up the northwest coast of Kayak Island-maintaining the same offshore distance.

1/ I went back and rechecked my notes and tapes for this day after I realized what was happening on the following days. No mention of whales.

2/ Between April 18 and April 26 we watched what I called rolling activity. The whales, in pods of 1-3 (occasionally 5) would come within 40 yards of shore for extended periods. They would at times float slowly on their side with the flipper

vertical out of the water--sometimes single, sometimes side by side with another whale. They would, while side by side, sometimes roll over and over like a barrel roll with first one whale coming partially out of the water and then the other. Other times one would appear to come from deeper water and rise vertically out of the water until the flippers were above water. They did not maintain this position but soon sank and/or fell forward into the water. It seemed that if they continued this activity for very long you would see one that would start swimming rapidly forward and raise its nose and mouth above water. While it was above the water you could see the mouth open and close several times rapidly. At times they'd do this only once--at others, 6-8 times repeatedly with short underwater runs between each above water period. Sometimes one would be floating on or near the surface and another would appear to approach rapidly at right angles and dive under the staionary whale or turn at the last moment and swim slowly side by side. At times they would raise an estimated 8-10 feet of the tail and fluke above the water and hold it vertically for 5-6 seconds, then splash. In one instance with this fluke activity it appeared that the whale would twist or rotate around its axis as it went back into the water. Like a wood screw going into a block of wood.

Generally, all this activity was relatively slow and smooth but on occasion it was with surprising speed and tremendous amounts of splashing and flying water. It lasted from a few minutes to over an hour with one pod--15 to 20 minutes being average. It was all large whales with one exception. A small calf (by fluke size) was seen with 3 adults. The calf participated at least in the floating on the side with flipper held veritcal out of the water.

3/ One whale observed crossing the reef west of the Pinnacle going south. Directly into sun and identificaiton impossible.

4/ We'd gone to the north end of Kayak Island and we could observe whales offshore between Cape Suckling and the Tushalick and Seal Rivers. We saw greys following the east coast of Kayak Island going southwest from 1/2 mile to 2 miles offshore. The 19 whales indicated were seen from the Cape--none of the east shore--Cape Suckling whales were put into count.

5/ I had a report from a Coast Guard man who made a flight on April 23, 1977 from Cordova down the Gulf of Alaska side of Hinchinbrook Island. He reported "lots" of whales near shore. From his description I believe them to be greys. He said they round the corner at Cape Hinchinbrook and go west; though he does not know if they enter Hinchinbrook Entrance or turn and go down the Gulf of Alaska shore of Montague Island.

Same Coast Guard man reported on May 30, 1977 10 killer whales went past Cape Hinchinbrook in a northwest direction.

Appendix 4. Net Marked Sea Lions Cape St. Elias Spring 1977.

Animal #	Sequence number	Sex	Date	History
12	1	Female	3-17-77	Sub-adult, very greasy-very light pelage.
	2	Male	3-20-77	Adult, very dark-no indention, looks like it may be healing-not greasy.
25	3	Male	3-21-77	Sub-adult, red color-wire, not too tight-loop on top of neck-greasy but not excessive.
	4	Female	3-18-77	Small, possible resight of animal #12.
	5	Male		Large, dark-net mark on side-appear to be healing. Not deep or greasy. Possible resight.
52	6	Female	4-5-77	Resight to 3-31-77.
	7	Male	4-13-77	Large, yellow monofiliment roll 5, pic. 6 & 7.
62	8	Male	4-17-77	Adult, blue monofiliment greasy (9/12, 11, 13, 15, 16/11).
	9	Female		Square headed, not so blond as animal #12, net directly behind ears, appears dark green band, greasy.
	10	Male	5-3-77	Clean, no grease, no visible net.
68	11	Male	5-10-77	Healed single line (14/11, 15/14, 15).
	12	Male	5-26-77	Sub-adult, net tight under chin, lays at a diagonal to neck, (17/8 and 9).

71	13	Female		Adult, bulged net neck with brown virus on hip.
85	14	Female	5-29-77	Adult, with 75 pup (n) green rope, not cut through skin but deep indentation, tight, 17/31, 18/24, 19/16.
87	15	Male	5-30-77	Large dominant, medium color, not greasy, left side black scar, right side 1 1/2 inch wide red wound 18/11, 12.
94	16	Male	6-1-77	Adult, single 30-40# monofiliment completely across chest-grim 18/19, 30 19/1.

Appendix 5. Seal Sightings C.S.E. Spring 1977.

Date	Number and location	Notes
3-8-77	2 seen in lagoon	
3-14-77	97 on Lion Island and Seal Rocks	Storm came up late 15th moved
3-16-77	-0-	seals. They did not return
3-17-77	55	till evening tide on the 17th.
3-18-77	-0- on high water; 56-57 on low water	
3-19-77	23	
3-20-77	26	Seals generally alone on Peninsula.
3-24-77	28 on Seal Rocks	
3-25-77	-0- on Peninsula	
3-27-77	15 on Seal Rocks	Lions moving to Seal Rocks.
3-30-77	43 on Seal Rocks	
3-31-77	21	
4-4-77	-0-	
4-5-77	47 seals on Lion Island	
4-7-77	17 on Seal Rocks	
4-8-77	9 on Seal Rocks	
4-10-77	24 on Seal Rocks	
4-12-77	14 on Seal Rocks	
4-13-77	62 on Seal Rocks	
4-14-77	26 on Seal Rocks	
4-15-77	84 on Seal Rocks	
4-16-77	17 on Seal Rocks	
4-26-77	233 on East Reef	(See notes of 4-26-77).
4-27-77	200+ on East Reef	
4-29-77	A few on East Reef	

5-4-77	43 on East Reef
5-5-77	-0-
5-12-77	69 seals on East Reef
5-16-77	43 on East Reef

Appendix 6. First sightings of birds at Cape.

Date	Bird	Notes
3-8-77	Surf Scoters Common Scoters White Wing Scoters	All 3 scoters present in sea and intertidal area. Surf Scoter most common.
3-8-77	Horned Grebe	
3-8-77	Harlequin Duck	
3-9-77	Fox Sparrow	On Pinnacle, within the week several were noted.
3-12-77	Bullfehead	
3-12-77	Dunlin	
3-12-77	Stellar Jay	
3-13-77	Black Legged Kittiwake	First notice of the diurnal movement of thousands of Kittiwakes.
3-14-77	Rock Sandpiper	
3-14-77	Bald Eagle	27 seen one area. Eagles seen from first day, daily, numbers vary.
3-15-77	Red Breasted Merganser	
3-16-77	Black Turnstone	
3-18-77	Murres	200 rafted west of Pinnacle.
3-22-77	Whistling Swan	
3-22-77	Pigeon Gillemot	
3-24-77	Blue Heron	Fed early AM on tideflats.
4-4-77	Oystercatcher	
4-6-77	Geese	1 unidentified flock.
4-8-77	Winter Wren	1 on Pinnacle, several seen within a few days.
4-9-77	Glaucous-winged Gull	Maintaining stations on Pinnacle.
4-12-77	Common Goldeneye Barrow's Goldeneye	
4-13-77	Tufted Puffin	
4-14-77	Canadian Geese	
4-16-77	Black Brant	
4-16-77	Horned Grebe	
4-16-77	Savannah Sparrow	
4-17-77	Kittlitz's Murrelet	
4-17-77	Peregrine Falcon	

4-21-77	Mallard	
4-21-77	Pintail	
4-22-77	Harlen's Hawk	
4-22-77	Marsh Hawk	
4-22-77	Water Ozel	
4-22-77	Green Wing Teal	
4-25-77	Widgeon	
4-25-77	Black Brant	
4-25-77	Double Crested Cormorant	
4-25-77	Tree Swallows	
4-25-77	Arctic Loon	
4-25-77	Short-eared Owl	
4-25-77	Surfbird	
4-26-77	Greater Scaup	
4-26-77	Lesser Scaup	
4-26-77	Robin	Heard in timber - possibly heard on 4-22-77.
4-26-77	Common Loon	
4-27-77	Hermit Thrush	
4-27-77	Swainson's Thrush	
4-30-77	Golden Crown S-arrow	
4-30-77	Mures	First day seen on Pinnacle.
5-1-77	Tufted Puffin	First day seen on Pinnacle.
5-1-77	White Flank Cormorant	First day seen on Pinnacle.
5-3-77	Sooty Shearwater	Possibility of a pink footed shearwater but at a great distance.
5-3-77	Loons	First day a large number of loons.
5-9-77	Ruby Crown Kinglet, Boreal Chickadee, Flycatcher, Semi-Palmated Plover, Brown Creeper	All seen on a trip across the back of the island.
5-10-77	Shoveler	
5-11-77	Oldsquaw	
5-12-77	Whimbrel	
5-12-77	Wandering Tattler	
5-12-77	Winter Wren	Building nest.
5-14-77	Murres & Tufted Puffin	On Pinnacle at all times now.
5-15-77	Kittlitz's	Moving east past Peninsula.

5-17-77	Longtailed Jaeger	
5-17-77	Leach's Petrel	
5-17-77	Fork-tailed Petrel	
5-17-77	Marbled Murrelet	Had been seen for several days but unidentified. Moving east past Peninsula.
5-20-77	Parasitic Jaegar	
5-21-77	Wilson's Warbler	Pair nesting.
5-31-77	Pink-footed Shearwater	Close to shore with sooties.
6-8-77	Kingfisher, Green Violet Swallow, Hummingbird	Seen on trip up east beach - obviously not even near arrival date.
6-14-77	Rhinoceros Auklet	

Appendix 7 Land Mammal Summary

1. Martin:

   Numerous along all beaches. This is surprising because no evidence of red squirrels was found. Remains near lairs indicate small songbirds, shore birds and rodents represent his diet. All observed martin had very dark pelage.

2. Beaver:

   One active dam and several abandoned dams seen in the marshes 2 1/2 miles northeast of the lighthouse. Observed from helicopter what appeared dams near the north end of the island.

3. Brown Bear:

   Trails and signs seen in all areas of the island. Tide fringe most frequent use area. One 10-mile section of the east beach on April 23, 1977 revealed one medium bear (8 in. diameter forepad), one female with a yearling cub, one medium size bear, all identified by tracks in damp sand. Feces on April 22-23, 1977 appeared to be vegetable matter; beach rye, scurry grass (*Cochlearia officinalis*), lupine roots, (*Lupinus nootkatensis*), laminaria and halosaccion glandiforma sea algaes. One feces contained old umbelliferae seeds.

4. Pica:

   Seen once in the rocks at the base of the Pinnacle.